[6450-01-P]

This document is scheduled to be published in the Federal Register on 04/20/2022 and available online at **federalregister.gov/d/2022-08383**, and on **govinfo.gov**

DEPARTMENT OF ENERGY

Spent Nuclear Fuel Management, Accelerated Basin De-inventory Mission for H-Canyon, at the Savannah River Site

AGENCY: Office of Environmental Management, U.S. Department of Energy.

ACTION: Amended record of decision.

SUMMARY: The U.S. Department of Energy (DOE) is amending its August 7, 2000, Record of Decision (ROD) to the *Savannah River Site Spent Nuclear Fuel Management Final Environmental Impact Statement* (DOE/EIS-0279, DOE 2000, SRS SNF EIS). The changes to the August 7, 2000, ROD memorialize DOE's decision to manage approximately 29.2 metric tons of heavy metal (MTHM) of spent nuclear fuel (SNF) and target materials (hereafter referred to collectively as SNF), using conventional processing without recovery of uranium at the H-Canyon facility at the Savannah River Site (SRS). DOE anticipates that processing this SNF would begin in 2022 and continue for approximately 12 to 13 years. DOE will send the dissolved material to the liquid high-level radioactive waste (HLW) system prior to immobilization the material in a borosilicate glass waste form in the Defense Waste Processing Facility (DWPF). In the meantime, DOE will continue to safely store SNF and target materials in L-Basin at SRS, pending processing in H-Canyon.

ADDRESSES: This Amended ROD, the *Supplement Analysis for the Spent Nuclear Fuel Accelerated Basin De-inventory Mission for H-Canyon at the Savannah River Site* (SRS ABD SA), and related National Environmental Policy Act (NEPA) documents are available on the DOE NEPA Web site at *www.energy.gov/nepa/nepa-documents* and the SRS Web site at *www.srs.gov/general/pubs/envbul/nepa1.htm.* To request copies of these documents, please contact: Mr. Jeffrey Bentley, NEPA Document Manager, Savannah River Operations Office,

U.S. Department of Energy, P.O. Box B, Aiken, South Carolina 29802, telephone: (803) 226–5113, email: *jeffrey.bentley@srs.gov*.

FOR FURTHER INFORMATION CONTACT: For further information on the management of SNF at SRS, please contact Mr. Bentley as listed in **ADDRESSES**. For information on DOE's NEPA process, please contact: Mr. William Ostrum, DOE-Office of Environmental Management, NEPA Compliance Officer, U.S. Department of Energy, 1000 Independence Avenue SW, EM–4.31, Washington, DC 20585 or via phone at 202-586-2513 or email at *William.Ostrum@hq.doe.gov.*

SUPPLEMENTARY INFORMATION:

Background

DOE's purpose and need for action, as described in the SRS SNF EIS (DOE/EIS-0279; DOE 2000), is to develop and implement a safe and efficient SNF management strategy that includes preparing SNF and target materials stored at or expected to be shipped to SRS for ultimate disposition offsite.

In the SRS SNF EIS**,** DOE evaluated the potential environmental impacts of alternatives for management of the SNF and target material. DOE analyzed five reasonable alternatives that could be used to manage SNF: No Action, Minimum Impact, Direct Disposal, Maximum Impact, and the Preferred Alternative. The action alternatives represent combinations of technologies applied to fuel groups.

Under the Preferred Alternative in the SRS SNF EIS, DOE would prepare about 97 percent by volume (about 60 percent by mass) of the aluminum SNF (ASNF) for disposition using a melt-and-dilute process. The remaining 3 percent by volume (about 40 percent by mass) would be managed using chemical processing.

DOE issued the Final SRS SNF EIS in March 2000 and issued a ROD on August 7, 2000, (65 FR 48224) selecting the Preferred Alternative. Since the ROD was issued, DOE has not implemented the melt-and-dilute technology. On April 5, 2013, DOE issued an Amended ROD to process a portion of the ASNF using conventional processing in lieu of the melt-and-dilute process (78 FR 20625).

DOE has explored various scenarios to address storage capacity limitations and technical issues associated with SNF and target materials at SRS. Due to the vast variety of ASNF at SRS, implementing a dry storage program, as a potential alternative to the melt-and-dilute process, that would be effective for all SNF is technically challenging. Considering the storage capacity for non-aluminum SNF (NASNF) and the future availability of processing capabilities (H-Canyon) and liquid HLW systems (DWPF and Tank Farms) at SRS, DOE has reevaluated the management approach for SNF at SRS.

DOE previously evaluated and decided to consolidate the SNF by fuel type at Hanford, Idaho National Laboratory, and SRS, in the *Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement* (SNF PEIS) (DOE/EIS-0203) and associated ROD (60 FR 28680, June 1, 1995). However, the decision to consolidate SNF by fuel type has not been fully implemented. DOE's inventory of ASNF has not been consolidated at SRS, and the NASNF has not been consolidated at the Idaho National Laboratory. This Amended ROD would not change that decision made in the 1995 ROD.

Under this Amended ROD, SNF (including both ASNF and NASNF, and target materials) located at SRS, would be transferred from L-Basin to H-Canyon for conventional processing[1] with no uranium recovery. At H-Canyon, the SNF would be dissolved in hot nitric

[1] Conventional processing is a chemical separation process that involves dissolving spent nuclear fuel in nitric acid and separating fission products from uranium using solvent extraction. After conventional processing, the solution containing the fission products is transferred to DWPF for immobilization in glass.

acid, producing a solution of highly enriched uranium (HEU), fission products, aluminum, and small amounts of transuranic materials such as neptunium and plutonium. The resulting solutions (including uranium-235) would be transferred to the SRS liquid HLW system and processed for immobilization[2] at DWPF; HEU would not be recovered. The key benefit of the non-recovery scenario is that it requires only a single-unit process step in addition to neutralization, greatly simplifying the processing required in H-Canyon. Potentially, 75 percent of the H-Canyon conventional processing systems (Head End, First Uranium Cycle, High-Activity Waste Evaporation, Second Uranium Cycle, Low-Activity Waste Evaporation, Solvent Recovery, and Acid Recovery) would not be used. Additionally, no blending down of HEU to low enriched uranium would be required. The resulting liquid waste would be sent to DWPF for immobilization into borosilicate glass. The HLW glass-filled, stainless-steel canisters from DWPF would be stored in S-Area until sent to a repository for disposal.

In accordance with DOE NEPA regulations at 10 CFR 1021.314, DOE prepared the SRS ABD SA (DOE/EIS-0279-SA-07, 2022). Based on the SRS ABD SA, DOE has determined that a supplemental or new environmental impact statement is not required. DOE also concluded in the SRS ABD SA that the proposed change and new information is not a substantial change relative to the alternatives analyzed in the SRS SNF EIS and, thus, no further NEPA analysis is required.

The impacts of the Proposed Action as described in the SA were determined to be small and would not result in releases to the environment or radiation doses or risks to members of the public or workers that would be significantly larger than those evaluated in the SRS SNF EIS. Annual impacts of processing the SNF described in the SA would remain similar to or bounded by those analyzed in the SRS SNF EIS since annual throughput would be similar. Since approximately 16 percent more SNF would be processed over the life of the Proposed Action

[2] A small quantity of low-activity liquid waste would be sent to the Salt Waste Processing Facility and eventually disposed of in grout at the SRS Saltstone Disposal Facility.

than the amount of SNF that was estimated to be processed under the SRS SNF EIS, some impacts of processing could increase by up to 16 percent. However, the reduction in processing steps would substantially reduce resource use and worker exposure and related impacts.

Under the Proposed Action, DOE estimates that immobilization of liquid waste resulting from the processing of 29.2 MTHM SNF (without uranium recovery) would result in about 505 HLW glass-filled stainless-steel canisters. This results in 435 more canisters from SNF processing than was analyzed in the previous SRS SNF EIS. In the context of the approximately 8,400 HLW glass-filled stainless-steel canisters that DOE's most recent estimate indicated would be produced at DWPF, this increase is not substantial (less than 7 percent), and SRS's total expected canisters would still be within the 10,000 canisters DOE evaluated in the *Final Supplemental Environmental Impact Statement, Defense Waste Processing Facility* (DOE/EIS-0082-S, November 1994) and no additional storage capacity would be needed.

Although a national repository for SNF has not yet been identified, DOE remains committed to meeting its obligations to safely dispose of SNF and HLW. The estimated 505 additional HLW canisters that would eventually require disposal would be more than offset by the estimated 1,000 SNF storage canisters that would have needed disposal if the SNF were not processed in H-Canyon.

Under the Proposed Action, because the uranium would not be recovered, the fissile material concentration in the HLW glass needs to be as much as 2,500 grams per cubic meter to maximize the amount of material allowed in the H-Canyon transfers sent to the HLW sludge batches. Analyses indicate that increasing the fissile material content in the glass up to 2,500 grams per cubic meter would not constitute a criticality issue and would have minimal impact on key properties related to durability of the glass. Testing has demonstrated that the HLW glass produced under the Proposed Action will meet the performance standards of previously produced DWPF glasses.

Implementing the Proposed Action would entail activities at H-Canyon that are the same as or comparable to existing or historical operations and are largely bounded by activities evaluated in the SRS SNF EIS. Therefore, the Proposed Action is not expected to result in substantial increases to the range of cumulative impacts described in the SRS SNF EIS.

Amended Decision

DOE has decided to implement the Proposed Action as described in the SRS ABD SA. DOE will manage up to 29.2 MTHM of SNF using conventional processing without uranium recovery in H-Canyon at SRS. DOE anticipates processing these materials beginning as early as 2022, and continuing approximately 12 to 13 years, consistent with program and policy priorities and funding. DOE will use three dissolvers in order to cost-effectively utilize H-Canyon and expeditiously complete the mission, although only two dissolvers would be operated at any one time. Meanwhile, SNF will continue to be stored in L-Basin at SRS, pending processing in H-Canyon.

In the ROD for the SRS SNF EIS (65 FR 48224, August 7, 2000), DOE identified the Minimum Impact Alternative as the environmentally preferable alternative; this has not changed. No environmental impacts resulting from operations under this amended decision would require specific mitigation measures. DOE will continue its current practices and policies to use all practicable means to avoid or minimize environmental harm and impacts to workers when implementing the actions described herein. For example, DOE will continue to evaluate and implement, as appropriate, physical modifications to the H-Canyon facility and process chemistry changes that would reduce personnel exposure, facility effluents, and waste generation.

Basis for Decision

The proposed use of conventional processing for 29.2 MTHM of SNF, including target materials, as described in the SRS ABD SA (DOE/EIS-0279-SA-07, 2022) and this amendment

to DOE's 2000 SNF ROD (65 FR 48224) takes advantage of existing processes in existing facilities. The activities encompassed by this amended decision will not incur potential health or environmental impacts significantly different from those analyzed in existing NEPA reviews. This amended decision reduces the overall cost of managing the currently stored SNF by eliminating the need for storage in L-Basin and maximizes near-term utilization of H-Canyon to expeditiously complete the mission. Further, the actions resulting from this Amended ROD allow processing of the remaining inventory of SNF stored at SRS L-Basin, converts the SNF to forms that are proliferation resistant and can be safely stored for long periods with minimal maintenance.

As described in the SRS ABD SA, most impacts would be similar to or bounded by those described in the SRS SNF EIS. While the decision documented in this Amended ROD will increase the number of canisters of vitrified HLW, it is not expected to significantly affect the quantity of vitrified HLW canisters requiring management and would be more than offset by the SNF canisters that would not require disposal.

The actions to be taken pursuant to this Amended ROD strongly support U.S. non-proliferation policy and goals by permanently dispositioning the HEU contained in the SNF. This Proposed Action is consistent with U.S. agreements regarding receipt of foreign research reactor materials in which involved countries with the economic ability to do so contribute to the costs of transportation and U.S. receipt, processing, and disposition of the materials.

Signing Authority

This document of the Department of Energy was signed on April 8, 2022, by William I. White, Senior Advisor for Environmental Management, Office of Environmental Management, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with the requirements of the Office of the Federal Register, the undersigned DOE Federal

Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. The administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on April 14, 2022.

Treena V. Garrett,

Federal Register Liaison Officer,

U.S. Department of Energy.

[FR Doc. 2022-08383 Filed: 4/19/2022 8:45 am; Publication Date: 4/20/2022]